

REMARKS

This application has been amended so as to place it in condition for allowance at the time of the next Official Action.

The Official Action rejects claims 1, 4, 6, and 7 under 35 USC §112, first paragraph as failing to comply with the written description requirement. Reconsideration and withdrawal of this rejection are respectfully requested for the following reasons:

The rejection consists of two parts. The first is directed to the deletion of the limitation "chromium free" from claim 1. Applicants have returned the term in question to such claim, thereby rendering this basis for rejection moot.

The second part of this rejection consists of the following language:

Regarding the claimed presence of acid salt in the resin layer, it is unclear where applicant teaches having acid salt compound in the resin layer other than where the resin layer is formed as part of a single treatment steps that forms both the intermediate and resin layer. For the reasons discussed in the Response to the Amendment, the originally filed Specification does not appear to teach that acid salt compound would be present as claimed in the resin layer were the resin layer applied by alternative methods.

MPEP §2163.02, page 2100-177 of Revision 2, May 2004, columns 1-2 defines the standard for determining whether a claim meets the written description requirement of 35 USC §112, first paragraph as follows:

An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989).

The invention for which applicants seek U.S. patent protection is a steel sheet having a surface-treated zinc-based plating. Correspondingly, all claims now under consideration are directed to a steel sheet having a surface-treated zinc-based plating. The invention is not, nor are the claims directed to, a method. The invention is not, nor are the claims directed to, a product-by-process.

The Official Action takes the position that the application as originally filed teaches that the presence of an acid salt compound in a resin layer requires use of the single treatment step to form both the intermediate and resin layers. Applicants have not taken a position as to the accuracy of this statement, because applicants do not understand why a method step is germane to a set of claims directed to a steel sheet.

Applicants understand that the process of manufacture could be the basis for a written description analysis rejection of a claim directed to a product. This would arise if the claim recited elements of the product that are inherently incompatible, where one element is present only in the case of a particular method and another claim element present only in the case of a different method. However, the Official Action makes no such

assertion nor are the applicants aware of any such basis for internal inconsistency within claim 1 or the claims that depend therefrom.

If the written description rejection is maintained with respect to this feature, applicants respectfully request that the Examiner expand on the basis for such rejection, including the citation of what the Examiner considers to be applicable case law as well as fitting the facts of the present application to whatever test for written description is provided by the identified case law.

The Official Action rejects claims 1, 4, and 6 under 35 USC §112, second paragraph as being indefinite. The first basis for this rejection is the question of whether the phrase "wherein all of the layers are superimposed on one another in the order mentioned" precludes intervening layers. The second basis goes to a number of questions regarding the phrase "containing the at least two acid salts".

Applicants respectfully note that the applicant is both entitled to and bound by the broadest reasonable interpretation of each of the recited elements of the claims in question, or any other claims for that matter. The Examiner's duty is to interpret each claim under consideration in accordance with such broadest reasonable construction and apply prior art that teaches the features of the claims given such construction. Applicants

therefore respectfully request examination of the present claims in light of such construction.

As to the final sentence in the present rejection, applicants suggest that the term "acid salt" assumes the same meaning in both of the phrases "at least two acid salts" and "containing the at least two acid salts". Applicants are entitled to the broadest reasonable construction of the term "acid salt" in each instance in the present claims.

The Official Action rejects claims 1, 4, 6, and 7 under 35 USC §103(a) as being unpatentable over NAGASHIMA et al. Reconsideration and withdrawal of this rejection are respectfully requested for the following reasons:

Surface treatment composition of NAGASHIMA 6,180,177 includes a silane coupling agent as an indispensable element (see, e.g., Abstract, claim 1). The role of the silane coupling is apparent from the description of the invention disclosed in col. 8, lines 11 to 38 of NAGASHIMA. In particular, the following explanations appear in col. 8, lines 16 to 38 of the reference:

I) When the surface of the metallic material is brought into contact with the aqueous surface-treating agent, which contains the composition of the surface-treatment agent, the etching of the metal surfaces occurs due to the acid composition in the treating liquid.

II) This (the etching) results in a rise of the pH at the interface. The dissolved metallic ions, the divalent or higher valent cationic component in the surface-treating liquid, and the water-soluble polymer are brought into reaction to form on the interface a difficult-to-dissolve resin coating.

This difficult-to-dissolve resin coating seems to exhibit a barrier effect that corrosion-resistance of the metallic material, fingerprinting resistance, blackening resistance, and adhesiveness of the paint coating are enhanced.

III) Silane coupling is concomitantly used and the functional group (-OR) of the silane coupling agent, which has undergone hydrolysis, forms an oxane bond with the surface of the metallic material. In addition, the adhesiveness of the metallic material and water-soluble polymer as well as that of the organic paint and water-soluble polymer is enhanced, presumably because the functional group of the silane coupling-agent reacts with the water-soluble polymer and the organic paint.

That is to say, according to NAGASHIMA, in order to achieve the effect of III) provided above, in other words, in order to form an oxane bond between a metal layer and a resin layer to enhance the adhesiveness of said two layers, the use of a silane coupling is indispensable.

In stark contrast, with the present invention, at least three types of acid salts selected from the group consisting of each of phosphate, nitrate, acetate and fluoride of Al, Mg, Mn,

Zn and Sn are included in the intermediate layer and in an organic resin layer, having the coating thickness of 0.1 to 1.0 μm , as now recited in claim 1. As set forth in a section titled Background Art, given from page 5, line 14 to page 6, line 9 in the specification of the present application, according to conventional arts concerning surface-treated steel sheets, when a resin layer is disposed as a whole to a greater coating thickness, because resin has insulation property, the resin layer becomes less conductive, although corrosion resistance can be secured. That is to say, the effects that a resin layer imparts to a steel sheet is inconsistent as far as corrosion resistance and conductivity are concerned.

The inventors of the present application discovered that the above-mentioned acid salts of the three types of polyvalent materials are in a stable state in a wide range covering from high pH area formed by etching to a range of low pH area developed by concentration through baking. As a result of the discovery, the inventors discovered that the above-mentioned acid salts of the three types of polyvalent metals, when used, constitute a cross-linking point between zinc plating and the resin. In this way, a resin layer of high density is formed. Accordingly, with the present invention, by specifying the coating thickness of an organic resin layer to be in the range of 0.1 to 1.0 μm , corrosion resistance and conductivity are concurrently achievable without using a silane coupling agent

which is inferior to metals in terms of conductivity. The matter mentioned immediately above is clearly disclosed by Inventive Examples Nos. 27 to 34, 48, 51 to 61 and 71 to 72. Namely, although no silane coupling agents are used in said Inventive Examples, these Examples are in no way inferior to the performance of other Examples wherein silane coupling agents are used. New claim 8 includes a recitation directed specifically to this feature.

Furthermore, NAGASHIMA does not refer to any value of the molecular weights of the resin used in the description, but it is understood that the value is several thousands at the most from the structure of chemical composition and ennage of the polymeric unit. With said molecular weights of the resin, corrosion resistance is insufficient, even if adhesiveness is improved by a silane coupling agent.

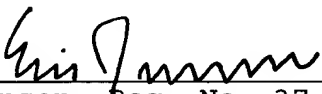
On the other hand, according to the present invention, resins having 15,000 or more of molecular weights are used as disclosed in the Inventive Examples. When resins having molecular weights which are as high as what mentioned above are used, high corrosion resistance can be obtained as a matter of course, however, because a formed resin layer is of high density, a coating thickness of 0.1 to 1.0 μm is achievable, and thus high conductivity can also be obtained.

In the light of the present amendments and Remarks, allowance of the application as amended is respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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